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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
RUTHKOSKY, MARK	

ART UNIT	PAPER NUMBER
1745	

DATE MAILED: 09/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/911,259	GITTO, GARY C.	
	Examiner	Art Unit	
	Mark Ruthkosky	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 August 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-41* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

The objection to the specification with regard to claims 24, 28, 30, 34, 37 and 41, for including new matter, has been overcome by the applicant's amendment filed 8/13/2004.

Specification

The amendment filed 8/13/2004 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material, which is not supported by the original disclosure, is as follows:

The limitation "of about 260 psi or greater" is not supported by the specification. The specification teaches various points for a flexural modulus value in specific examples including the point 260 psi; however, no range is provided for *about* 260 psi *or greater* for the general composition. There is no support for the points greater than 260 psi or *about* 260 psi.

With regard to claims 25, 31 and 38, there is no support for a limitation of a V-O rating at a thickness of "greater than about 1/32" of an inch. There is support for burn ratings from 1/32-1/8" as noted in Table 4. There is no support for the points greater than 1/8".

With regard to claims 27, 33 and 40, there is no support for a Gardner impact value of greater than about 1 ft./inch at a thickness of about 1/8 inch. With regard to thickness, there is support for burn ratings from 1/32-1/8" as noted in Tables 2, 4, and 6. Gardner impact values are

noted in Table 4 for the points of 12, 14, 15, and 16 ft./inch. Other specific values are noted in Tables 2 and 6. There is no support for 1 ft./inch or any point greater than 16 ft./inch.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nalepa (US 5,204,393) in view of Bolthouse (EP 0 618 255 A1.)

The instant claims are to a battery casing formed of a flame-retardant thermoplastic composition comprising a homopolymer, a copolymer, and a phosphate salt. The casing has a burn rating of V-O under the UL-94 standard and a flexural modulus of about 260,000 psi or greater. Other materials, including fillers, may be added. Further claims comprise a battery casing comprising a) a bottom portion having a bottom and side walls forming a compartment for holding battery acid and battery plates and b) a top portion for covering the compartment, wherein the bottom portion and the top portion are formed of a flame-retardant thermoplastic composition comprising a homopolymer, a copolymer, and a phosphate salt. The casing has a burn rating of V-O under the UL-94 standard and a flexural modulus of about 260,000 psi or greater. Other materials, including fillers, may be added.

Nalepa et al. (5,204,393) teaches a flame-retardant polyolefin composition useful for battery cases (column 5, lines 10-11), which comprises a combination of ammonium polyphosphate, a mixture of homopolymers and copolymers, and melamine cyanurate. The polymer composition includes homopolymers of polyolefins, mixtures of polymers and copolymers, terpolymers, etc. of one or more polyolefins (claims 1-2, and column 2, lines 57-60). Specific examples include polyethylene, polypropylene and polybutylene, including homopolymers and copolymers thereof and various types of such polymers, a copolymer of two or more polymers such as, for example, i) a copolymer made with ethyl vinyl acetate and ethylene and ii) a crystalline copolymer made with ethylene and propylene and iii) a blend of two or more polymers such as polypropylene and polyethylene in any ratio (column 3, lines 40-50). Nalepa et al. (5,204,393), further teaches polytetrafluoroethylene to be added to the mixture, (see col. 5, lines 15-55 and the examples.) The mixture is blended in a temperature range of 170-210 °C (column 7, lines 32-33). The amount of ammonium polyphosphate falls with in the range of 25-27 percent (see claim 3, column 10, lines 60-61 and claim 10, column 12, lines 8-9).

Nalepa et al. (5,204,393) teaches a polymer composition including mixtures of polymer and copolymer materials, but does not provide a specific example of a polymer and copolymer. Nalepa is also silent to the flexural modulus of the materials. Boathouse et al. (EP 0 618 255 A1), however, teaches a flame-retardant composition useful for battery cases (page 5, lines 34-35) where a propylene homopolymer and a copolymer of propylene and a select second olefin are combine to form a polymer composition having an improved flame resistance (see claim 1, page 5, lines 44-55). The polymer composition may be in the range of 30-60 percent homopolymer and a copolymer of 5-70 percent (see claim 1, lines 45-50). The flexural modulus

of the materials are in the range from 240,000–241,000, which is considered to be about 260,000, and obtained UL ratings of V-O (see the tables for specific examples.) Gardner Impact values for examples 1 and 2 (in EP 618,255 are about 120 in-lb) are greater than 1 ft-lb/in. at 1/8 inch (or 1.5 in-lb.) To one skilled in the art at the time the invention was made, it would be obvious to use the composition of homopolymer and copolymer as described in EP 0 618 255 A1 as the polymer mixture for the flame retardant material described in Nalepa et al. (5,204,393). Nalepa et al. (5,204,393) teaches the mixture of polymers and copolymers and EP 0 618 255 A1 provides specific examples of these materials. In addition, it is prima facie obvious to combine two compositions, each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition which is to be used for the very same purpose, *In re Kerkhoven*, 205 USPQ 1069, 1072.

With regard to the claimed flexural modulus values of the material, the flexural modulus of the materials in the reference are in the range from 240,000–241,000, which is considered to be about 260,000 psi, as claimed. However, flexural modulus value of a material is well known in the art to describe the stiffness of the object. As the composition of materials are well described in the art to form a battery casing with flame resistant properties, it would be obvious to one of ordinary skill in the art to modify the amount of these materials in order to alter the flexural modulus of the casing. It is well within the proficiency the skilled artesian to alter the amount of each component of the mixture in order to achieve a balance of casing strength, flexibility, workability and flame resistance. The art recognizes that each component contributes to these features and the skilled artesian to modify the concentrations of each material in order to achieve the desired casing characteristics.

With regard to claims 14-16, which claim the thermoplastic composition further includes a filler selected from a group consisting of aluminum trihydrate, hydrated magnesium, hydrated calcium silicate, and calcium carbonate in a defined concentration range and further adding melamine and polyol to the fillers, Nalepa et al. (5,204,393) teaches a flame-retardant polyolefin which comprises a combination of ammonium polyphosphate, melamine cyanurate and the polymer composition. Hydrated magnesium (talc) is used as a filler in both references, (see Nalepa, column 7, line 26 and EP '222, various locations.) The mixture further includes sodium silicate filler in an aqueous medium (Nalepa , column 4, lines 34-35). The concentrations of filler in examples 1 and 2 of Boathouse are within the range of 0-250 parts per 100 parts of the homopolymer and copolymer. Melamine is also included in the preparation (see column 7, line 28). It would be obvious to one of ordinary skill in the art at the time the invention was made to use sodium silicate as a filler in the place of calcium silicate, as the countercation is a spectator in the silicate salt. The spectator cation is not involved with the chemical process associated with the silicate. Thus, substituting a countercation is well within the proficiency of one skilled in the art. To one skilled in the art, it would be obvious to use the fillers taught in Nalepa et al. (5,204,393) in battery casings as the properties of these fillers are taught and described in the art as noted.

With regard to claims 17-19, which incorporate the battery casing described in the instant invention in a photovoltaic battery, a motive battery, and a backup battery, Nalepa et al. (5,204,393) teaches a flame-retardant polyolefin which comprises a combination of ammonium polyphosphate, melamine cyanurate and a polymer which may be used as a battery casing. It is noted that the use of the casing in a photovoltaic battery, a motive battery, or a backup battery

does not further limit the casing. However, it would be obvious to one skilled in the art at the time the invention was made to incorporate the battery case taught in the art into a photovoltaic battery, a motive battery, or a backup battery. The battery casing does not change the basic, inherent properties of the battery. It may improve casing characteristics such as durability, strength or temperature resistance of the battery, however it does not alter the basic elements incorporated in the battery itself. It would be obvious to one skilled in the art to substitute a battery casing to improve the flame-retardant properties, as taught by Nalepa, in any type of battery.

With regard to claim 24, 30 and 37, the reference does not teach the phosphate salt to be an ethylene diamine phosphate salt, however, it does teach the use of phosphate salts as additives for preventing the burning battery cases of polymer compositions (as taught by the applied references.) One of ordinary skill in the art would understand that the cation of the salt would have a limited affect on the property of the salt and one of ordinary skill in the art would recognize phosphate salt equivalents for the same purpose. From these teachings, it would be obvious to one of ordinary skill in the art at the time the invention was made to use an ethylene diamine phosphate salt as an additive for preventing the burning of a polymer composition in the applied references. Ethylene diamine is a well-known cation for phosphate salts.

With regard to claims 27, 33 and 40, the Gardner impact value is inherent to the materials of the casing. As the materials of the art are the same, one of ordinary skill in the art would have the knowledge to adjust the amounts of materials in order to prepare a casing with desirable characteristics such as material strength and low flammability. As noted, the Gardner Impact values for examples 1 and 2 of EP 618,255 is greater than 1 ft-lb/in. at 1/8 inch (or 1.5 in-lb.)

With regard to claims 28, 34 and 41, the specific gravity will be a value that is inherent to the materials of the casing. As the materials of the art are the same, one of ordinary skill in the art would have the knowledge to adjust the amounts of materials in order to prepare a casing with desirable characteristics such as material strength and low flammability.

With regard to claims 20-22, the instant invention is to a method for forming a flame-retardant composition for a battery casing comprising blending a homopolymer, a copolymer and a phosphate salt together at a temperature in a range from about 340-410 ^{o}F to form the flame retardant composition; the composition has a melt flow rate in the range from about 9.6 to about 16.0 g/10 minutes, a burn rating of V-O under the UL-94 standard and a flexural modulus of about 260,000 psi or greater; and the composition is blended with two rotors.

Nalepa et al. (5,204,393) and Bolthouse (EP 618,255) teach a flame-retardant polyolefin as noted. The reference does not specifically teach mixing at 340-410 F or a melt flow rate in the range of 9.6 to 16g/10 min. The methods are shown in the Table on page 3. The method for preparing the flame-retardant polyolefin describes a mixing process using a Banbury type mixer (see 5,204,393, column 5, column 7, lines 30-33 and page 3 of the '255 document). Banbury mixers are used in the instant specification for blending. Various mixing/blending techniques and parameters are noted in EP 618,255 (see the examples and tables on pages 3-5.) The blending is done at temperatures equal to or exceeding the polymer softening temperature (page 3.) Melt flows are noted in examples 4-6 that are about 9.6. It would be obvious to one of ordinary skill in the art at the time the invention was made to mix the materials in a manner known in the art to manufacture the desired product. Mixing the components in a Banbury type mixer would be one possible method of preparing the product. Using any of the conventional

methods shown in the references to obtain the desired mixing results would be obvious to one skilled in the art. One of ordinary skill would have the knowledge to regulate the temperatures and melt flow rate in order to achieve homogeneous mixing of the materials to form the casing.

The artesian would have found the claimed invention to be obvious in light of the teachings of the references.

Response to Arguments

Applicant's arguments filed 8/13/2004 have been fully considered but they are not persuasive. The applicant argues that the combination of references does not teach battery casing formed of a flame-retardant thermoplastic composition comprising a homopolymer, a copolymer, and a phosphate salt, wherein the casing has a flexural modulus of about 260,000 psi or greater.

The flexural modulus of the casing materials in the reference are in the range from 240,000–241,000, which is considered to be about 260,000 psi, as claimed. However, flexural modulus value of a material is well known in the art to describe the stiffness of the object. As the composition of materials are well described in the art to form a battery casing with flame resistant properties, it would be obvious to modify the amount of these materials in order to alter the stiffness of the casing. It is well within the proficiency the skilled artesian to alter the amount of each component of the mixture in order to achieve a balance of casing strength, flexibility, and flame resistance. The art recognizes that each component contributes to these features and the skilled artesian to modify the concentrations of each material in order to achieve the desired casing characteristics.

Examiner Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Ruthkosky whose telephone number is 571-272-1291. The examiner can normally be reached on FLEX schedule (generally, Monday-Thursday from 9:00-6:30.) If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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9/3/04